

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.



A423
R31F

UNITED STATES
DEPARTMENT OF AGRICULTURE
LIBRARY



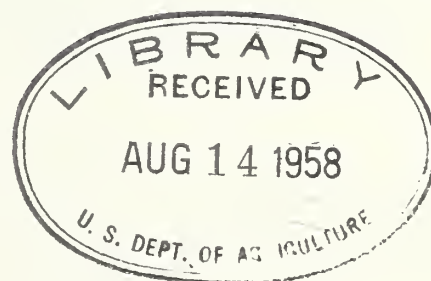
BOOK NUMBER

A423
R31F

948540

Facts About

**THE IMPORTED FIRE ANT
ERADICATION
PROGRAM**



April 1958

AGRICULTURAL RESEARCH SERVICE

U. S. DEPARTMENT OF AGRICULTURE

Man vs. Fire Ant

Since before the dawn of civilization, insects have been relentless competitors for nearly all our food, feed, and fiber, and have wanted to occupy places chosen by man.

The imported fire ant, known to scientists as Solenopsis saevissima richteri, is a good example of a persistent rival of man.

The well-known naturalist, Edwin Way Teale, writing in USDA's 1952 Yearbook of Agriculture, says: "A hundred years ago, when Henry W. Bates was collecting in the Amazon basin, he encountered villages that had been deserted because of the invasion of fire ants. These small insects have stings like red-hot needles."

Mr. Teale was describing an ant related to the same kind that slipped into this country from South America some 40 years ago. Since that time, it has spread from a few mounds along our Gulf Coast to more than 20 million acres in 10 Southern States.

This unwanted insect-invader is the target of an aggressive attack because its interests and man's are opposed at so many points.

Information in this report was furnished by the Plant Pest Control Division and Entomology Research Division, Agricultural Research Service

Facts About

THE IMPORTED FIRE ANT ERADICATION PROGRAM

The imported fire ant eradication program is a cooperative Federal-State-local effort to rid the South of this annoying and destructive pest because:

- It is a destroyer of plant, animal, and bird life.
- It builds mounds that interfere with farm operations and mar landscapes.
- Its fiery sting, which gives the insect its name, is painful and can cause serious illness.

All in all, it is one of the worst insects in the South. It has established itself in Alabama, Mississippi, Louisiana, Florida, Georgia, and Texas, and limited infestations have been recorded in Arkansas, North Carolina, South Carolina, and Tennessee.

The imported fire ant has become such a problem that Congress in 1957 authorized the U. S. Department of Agriculture to join all interested States in an intensive attack on this insect enemy. Cost of the program, which was urgently requested by both rural and city residents, is borne on an equitable basis by Federal, State, and local governments, and property owners in areas plagued by the fire ant. Treatment under the cooperative program began in some States in the fall of 1957.

HOW THE PROGRAM IS SET UP

The program is being conducted jointly by the Plant Pest Control Division of USDA's Agricultural Research Service and State plant pest control agencies with the close cooperation of other State agencies and institutions, local governments, organizations, and property owners.

In States where the imported fire ant has gained a foothold, fire ant advisory committees will be, or have been, organized. They usually are set up at both State and local levels.

The State committee works with program officials in developing plans and conducting the fire ant program in the State. Local committees have these main duties: Represent property owners, arrange for local participation, and work with program officials in carrying out the program. Local committees are organized by county agents, farm organizations, and other local groups and individuals. When a cooperative program is undertaken in an area, farmers and other residents participate through the local committees, which decide how local support--cash, materials, or labor--is to be obtained. Some State and county highway commissions are making plans to participate in treating roadsides. It is expected that railroad companies will participate where rights-of-way are involved.

There are not enough Federal and State funds available for imported fire ant treatment in all infested areas during the first year of the cooperative program. As a result, the program will be directed into those areas where available funds will contribute the most toward attaining the overall objective--prevention of spread and the eventual eradication of the imported fire ant from the South.

PROGRAM PHASES

Under the cooperative program, three basic steps are necessary to carry out an effective eradication effort:

1. Surveys to determine the distribution, abundance, and damage of imported fire ants.
2. Eradication with the most effective insecticides in an organized program.
3. Regulatory work to control movement of materials that might spread fire ants.

Surveys

Survey teams of Federal and State workers provide program officials with essential information about the imported fire ant. These surveys show where the pest occurs, its numbers, and damage it causes or threatens to cause. Such information permits program officials, with the aid of the advisory committees and other Federal-State agencies, to plan the fight against the fire ant.

Eradication

Although more than 20 million acres are fire ant-infested, only a small portion of the total acreage will be treated in a given year.

Any large infested area will be divided into smaller areas for treatment over a period of three or more years. Infestations as a rule do not cover extensive areas without a break.

To stamp out this insect pest, all infested lands will need to be treated. Such an inclusive attack is needed because fire ants on lands left untreated could reinfest treated areas after the residual effect of the insecticide is gone.

Eradication normally will move in two directions: From outlying infested areas inward, and from generally infested areas outward. The objective is to clean out an area and keep it clean as the program progresses.

Most effective time for field operations--surveys and eradication work--against the imported fire ant is from November through April.

Where imported fire ant infestations are heavy and extensive, treating the entire soil surface of an area has been found to be more effective

than individual mound treatment. However, in small, lightly infested areas, each mound and a suitable margin around it may be treated, provided program officials feel eradication will be accomplished by this method.

Treatment under Cooperative Program

A Federal-State program will be undertaken where owners of a sizeable group of properties have agreed to organize and carry to conclusion an eradication program and where there is sufficient protection from re-infestation. Such protection might be afforded by large uninfested areas such as swamps, deep woods, or bodies of water. It might also be provided by progressive treatment of lands adjoining a treated area before the residual effect of the insecticides to be used give effective control of imported fire ants up to 3 years after application.

Insecticides are applied by aircraft, motorized ground equipment, and hand applicators. Means of application depend largely upon land use and size of the block to be treated.

In the cooperative program, wide use is being made of dieldrin and heptachlor in dry, granular form, applied at the rate of 2 pounds to the acre. In this form--a cream-grey material similar in texture to granulated sugar--it reaches the ground where it can kill fire ants. Using a material that does not adhere to plants reduces the risk to animals and birds that feed on foliage, berries, and fruits.

Only a single application of insecticide normally is needed, although followup "spot" treatments may sometimes be needed.

Since insecticides used in the program are poison, property owners, when their area is to be treated, are asked to take certain precautions:

1. When treatment is done during the growing season, livestockmen and dairymen should remove all livestock from pastures before treatment and keep them off for 2 weeks or longer--or at least until a heavy rain--after the pastures are treated.
2. Turn over or cover all animal or poultry water and feed containers.
3. Cover all open wells and springs.
4. Cover small fish ponds, bait boxes, rabbit pens, and entrance boards to bee hives.
5. Thoroughly wash leafy vegetables exposed to the treatment before eating them.
6. Housewives should not hang laundry outside the day of the application.
7. Windows of homes and animal shelters should be closed while treatment of the area is underway to keep out any drifting material.
8. On lawns where children play, the grass should be thoroughly watered after treatment.

The success of the program will depend largely upon local participation, which hinges upon public understanding of the imported fire ant problem.

Every effort is made to notify residents in advance of treatment. In areas already treated, press, radio, and television have helped greatly in reporting application schedules.

Treatment by Individuals

Residents in generally infested areas where no cooperative program is under way are encouraged to conduct control work on their properties. This will make the job easier when an organized eradication program is undertaken in their area. Federal and State technical assistance will be given persons or groups treating their properties in advance of the public program.

Best time for individuals to apply insecticides for fire ant control is through the fall, winter, and early spring. Here's why:

1. After plants begin their growth in the spring it is more difficult to locate and treat mounds.
2. There is no problem of insecticide residue on growing crops during cold months.
3. Chances to kill winged queen ants are better before they leave the nest in early spring to start new colonies.
4. Insecticides can be mixed with fertilizer and applied at the regular time to fertilize, and thus the farmer can do two jobs at one time.
5. Imported fire ants live near the top of the mound in cold months, but go below ground level in hot weather during the summer.

Besides heptachlor and dieldrin, other insecticides found effective for controlling imported fire ants are chlordane and aldrin.

Individual mound treatment is simple. A liberal (two cupsful) of dust or granular insecticide containing 10 percent chlordane or 5 percent aldrin, dieldrin, or heptachlor should be uniformly spread over each average-sized mound and for a radius of 20 feet around the mound.

PRECAUTIONS

These insecticides are poisons. They should be used according to directions. Dusts and sprays should not be inhaled. Respirators should be used in mixing and blending operations. If concentrated insecticides are spilled on the skin, it should be washed immediately with soap and water. Clothes that have been contaminated should be laundered. Children or pets should not be allowed on treated lawns until the insecticide has been washed into the soil by rain or by watering.

Residents of both the areas susceptible to infestation as well as those of fire ant-infested areas and of areas where fire ants may become established, have a stake in the program. Fire ants not only are a nuisance, but they may become numerous enough to lower the value of property.

Regulatory Work

To help prevent the spread of the imported fire ant during the eradication program and to protect treated areas from reinfestation, a Federal quarantine has been invoked. It regulates the movement of such materials as soil, gravel, and sand, or products with which soil is closely associated, including balled and burlapped nursery stock and grass sod. States immediately affected by the quarantine are Alabama, Florida, Georgia, Louisiana, Mississippi, and Texas.

Information on the regulatory aspects of this program may be obtained from the State regulatory agency in each State or USDA's Plant Pest Control Division, P. O. Box 989, Gulfport, Mississippi.

PESTICIDES AND WILDLIFE

Recognizing that the imported fire ant is a serious pest of ground nesting birds and newborn wild animals, wildlife stands to gain from the eradication of this pest.

Eradication program officials, however, are aware that improper use of pesticides can endanger these and other forms of wildlife, including insect predators such as birds, fish, and frogs, and beneficial insects such as bees.

Therefore program plans are carefully laid and carried out to prevent injury or loss of beneficial wildlife. To prevent loss of wildlife, the plan of operations calls for treating only a part of any large area in which fire ants are present. If wildlife or helpful insects are killed they can repopulate the area from untreated areas nearby.

Airplanes are being used only where it has been determined that precision coverage can be obtained without danger of contamination of ponds and streams. Application of insecticide by manual and mechanized ground equipment is being used in many areas to prevent harm to fish and wildlife.

There is good evidence that these program plans are paying off in terms of wildlife protection. For example, the eradication of the imported fire ant from 12,000 acres in Union County, Ark., in 1957 was accomplished with a minimum of hazard. Continued observations indicate no sustained loss in bird population.

And while eradication work goes on, Fish and Wildlife Service personnel are observing the effects on wildlife. At the same time, USDA is continuing to conduct research to improve the effectiveness of the program. For example, scientists are seeking an attractant for the imported fire ant that could allow the use of less insecticide than is needed at present.

HISTORY OF CONTROL EFFORTS

The imported fire ant is believed to have come into this country about 1918, but because it resembles native fire ants, it was not identified as a separate species until 1930. However, several mounds of what is now believed to have been the imported fire ant were found in Mobile County, Ala., in the mid-1920's. In the next decade they were found in another Alabama county.

The first large-scale control effort was made in 1937 in Alabama. Fairly good results were obtained with cyanogas. The pest appeared to die down for a time, but by 1947 it had spread to a number of areas in Alabama and Mississippi. Mississippi initiated an extensive control program in 1948, obtaining good results with a 5 percent chlordane dust.

Research to gain information on the biology, control, distribution, and economic importance of the imported fire ant was begun in 1949 in Alabama. The cooperative project was conducted by Alabama, Mississippi, Florida, and USDA.

Joint Federal-State surveys were made from 1949 to 1953 to determine the distribution of the imported fire ant. When this work was begun, the known infestations were in 10 counties of southeastern and eastern Mississippi, 8 counties of southwest and south-central Alabama, and 2 counties of western Florida, for a total of 20 counties in 3 States. By the end of 1953, the pest was known to infest 102 counties in 10 States.

The imported fire ant was found in North Carolina in 1952. Treatment was promptly begun and establishment of the pest at that time was prevented. The pest was not again found in North Carolina until late in 1957. This latter infestation was treated promptly and the pest is believed to have been eradicated.

The Louisiana legislature in 1952 appropriated money to purchase chlordane to be furnished at cost to farmers for the control of imported fire ants. The Louisiana Extension Service and USDA conducted demonstrations throughout the infested areas of the State to show farmers how to use the insecticide against the fire ant.

Small infestations discovered in Tennessee in 1950 were wiped out in 1952.

At that time, it was believed that the infestations in the South could be wiped out on an individual property owner basis. It became evident, however, that such an approach was not solving the problem in heavily infested areas.

By the beginning of 1957, imported fire ant infestations were reported in more than 170 counties and parishes in 9 States--the original 10, less Tennessee. More than 20 million acres were infested.

After many appeals were made from fire ant-infested States for Federal assistance, Congress in 1957 authorized USDA to join interested States in an eradication program.

Before the cooperative program was authorized, the Arkansas Plant Board conducted an imported fire ant eradication program on 12,000 acres in

Union county, including the city of El Dorado, in June 1957. In this project, aircraft applied heptachlor in dry, granular form at the rate of 2 pounds to the acre with excellent results.

FIRE ANT SPREAD

One of the chief means of natural local spread of imported fire ants is the mating flight of winged queen ants. But they also spread long distances by being carried in cars, trucks, trains, airplanes, boats, and even on logs and debris floating in streams. An important means of spread into distant areas is in balled and burlapped nursery stock.

The pest is believed to have come to the United States as a stowaway aboard a boat from a South American port, since it was first noticed around the bay front of Mobile, Ala.

In its native South America, the pest is found in Brazil, Argentina, Uruguay, and Paraguay. Considering the climate and environment of these nations in terms of this country, it is possible that the imported fire ant could spread northward as far as the 40° parallel of latitude--that is, to a line as far north as Denver, Indianapolis, and Philadelphia. Fire ants have been found in the Andes Mountains of South America at 12,500-foot elevation, as well as in the sea-level marshes of Buenos Aires.

FIRE ANT DAMAGE

Imported fire ants damage many crops by sucking the juice from their roots, stems, seeds, and tender shoots. These crops include corn, peanuts, beans, Irish potatoes, sweetpotatoes, cabbage, collards, okra, squash, soybeans, tomatoes, cauliflower, watermelons, and eggplants. They have been found associated with many kinds of nursery stock.

Imported fire ants also attack the young of animals and birds--wild and domestic. They will enter pipped eggs of poultry and ground-nesting birds to attack the young as they emerge from the shell. They are known to attack newborn rabbits and squirrels.

Losses of young pigs and calves have been reported on a number of occasions. In Mississippi, a large sheep producer has gone out of this business because fire ants took such a heavy toll of newborn lambs.

Worker ants feed on honeydew obtained from aphids, scale insects, and mealbugs. They also eat both dead and live insects.

Although primarily a field or out-of-doors insect, the imported fire ant will invade houses. Its favorite foods in pantries are meat's, butter, cheese, nuts, and bread. But unlike many ants, it shows little interest in household sweets.

FIRE ANTS AND HUMANS

Anyone stung by an imported fire ant knows that the painfulness of its sting is far out of proportion to its size. It sinks its jaws into the flesh, then drives its stinger into the lacerated skin, injecting an

irritating fluid--sometimes in a half-dozen spots around the initial sting. The sting of just one fire ant usually is not dangerous, but often many ants attack at once.

The imported fire ant sting normally brings a brief, stabbing pain and the area begins to itch and burn. Afterwards a pimple-like sore forms that often leaves a scar. Persons who are unusually sensitive to fire ant venom may, when stung several times, suffer chest pains, nausea, and even lapse into a coma. This is the same sort of effect sometimes caused by the stings of bees, wasps, and hornets.

Imported fire ants are vicious and aggressive when disturbed. They have been known to rout field workers and it often is difficult to hire workers to harvest crops or cultivate gardens in heavily infested areas.

The high, hard-surfaced mounds of imported fire ants make it difficult, and sometimes impossible, to use certain mechanical equipment where mounds abound. They are particularly troublesome in hay fields. Blades of harvesting machinery may be damaged or broken when they strike the hard mounds. When workers stop to repair damaged equipment, they are subject to attack by the ants.

Children who disturb a fire ant mound may be severely stung, since the slightest disturbance brings forth a multitude of worker ants. The fighting instinct of fire ants make them serious pests of man and animals.

THE ANT ITSELF

There are three adult forms of the imported fire ant: (1) Winged fertile females (queens), which lay eggs; (2) winged fertile males, which mate with queens; (3) worker ants, which are wingless females and usually sterile, so far as is known.

Most ants in a well-developed nest are wingless workers. Although their color is fairly constant within a colony, it may vary widely from nest to nest. Generally they are dark brown to reddish-black with an orange-colored band at the base of the abdomen. The lighter ants closely resemble the darker forms of native fire ants. It takes an expert to tell native fire ants from the imported species.

Imported fire ant workers also may vary markedly in size--from one-eighth to one-fourth-inch long. The smaller ones usually are from a queen's first brood.

Winged queens and winged males are rarely seen outside the mound. They live inside until time to leave the mound for their nuptial or mating flight. After mating, the fertilized queen finds a nesting site, sheds her now useless wings, digs a brood chamber 1 to 4 inches under ground, then plugs the entrance tunnel. She lays her first cluster of eggs--10 to 15 eggs--usually the day following mating. This is the start of the new colony. The winged male, meanwhile, is homeless and dies within a few days after mating.

By the time the first cluster of eggs hatches into larvae (in 8 to 12 days), the queen has laid a hundred or more eggs. The eggs look something like finely ground meal.

When the larvae appear they are helpless, dirty-white grubs. The first brood is cared for by the queen, but workers feed later broods. The larval stage of workers is 6 to 12 days.

The larvae then change to pupae that are pale, shiny white, and about the same size as the adults which they resemble in shape. They gradually darken and adult workers emerge in 9 to 12 days.

Workers care for the brood, forage for food, maintain and enlarge the colony home, and protect the nest from enemies.

MOUNDS

Imported fire ant mounds may be found in almost any kind of soil. They are most common in open areas such as pastures, parks, and cultivated fields, but may be found in rotting logs and around tree trunks, and occasionally under buildings. Normally, however, they are located in direct sunlight.

A mound arises when workers from the queen's first brood enlarge the underground quarters. The workers of later broods help build a firm mound that is honeycombed with underground passages.

Although mound size depends on its location and age, an average mound is about a foot high and 2 feet across. Most of the honeycombed galleries are built within a cone, the point of which may be 3 feet below the surface. This cone and the above-ground portion of the mound contain most of the colony--about 25,000 ants in an average nest. More than 100 mounds to the acre is not uncommon in heavily infested areas.

Entrance holes normally are not on the mound itself. The workers leave and enter the mound through tunnels constructed just below the surface, with openings at varying distances from the mound itself--sometimes many feet away. Large exit holes are made in the mound itself when a winged queen and her mate prepare to leave the mound. The workers promptly close the exit after the flight. Holes appear from time to time in the solid surface of the mound as a result of heavy rains or natural disturbances. When this happens, workers are quick to make repairs.

COLONY MOVEMENT

A heavy fire ant population in an area often causes the ants to seek a new location. A disturbance of the mound may cause a colony to move, or sometimes the workers of a colony will locate a new and better source of food. Then, too, the older and larger a mound is, the more difficult is maintenance by the worker ants. The colony may move 25 feet or more, or it may move no more than 3 or 4 feet. But when the move is called for, the operation is entirely in charge of the workers. They direct their fellow-dwellers out through underground passages, carrying eggs, immature insects, and food to their new home.

HOW INDIVIDUALS CAN HELP

1. Report infestations suspected to be imported fire ants to the county agent of State entomologist as soon as possible.
2. Participate in community action designed to wipe out the fire ant.
3. Give survey and eradication workers free access to property.
4. Follow all precautions recommended when insecticides are applied.
5. Treat fire ant mounds in advance of the coordinated program.

